

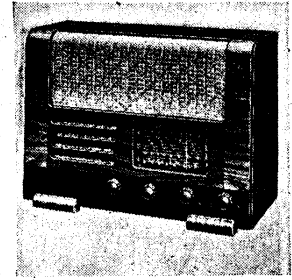
"TRADER" SERVICE SHEET

854

ALBA 471

FOUR-BAND

BATTERY SUPERHET



TWO valves are used in a Q.P.P. output circuit in the Alba 471, a 5-valve 8-band battery superhet, whose S.W. range is 19-50 m. Provision is made for a pick-up and an external speaker.
Release date and original price: May, 1947; £16 16s.

CIRCUIT DESCRIPTION

Aerial input via series capacitor C1 and coupling coils L1 (S.W.), L2 (M.W.) and L3 (L.W.) to single-tuned circuits L4, C25 (S.W.), L5, C25 (M.W.) and L6, C25 (L.W.), which precede octode valve (V1, Mullard metallized KK32) operating as frequency changer with electron coupling.

Oscillator grid coils L7 (S.W.), L8 (M.W.) and L9 (L.W.) are tuned by C26. Parallel trimming by C27 (S.W.), C28 (M.W.) and C6, C29 (L.W.); series tracking by C7 (S.W.), C8 (M.W.) and C9 (L.W.) Reaction coupling by anode coils L10 (S.W.), L11 (M.W.) and L12 (L.W.).

Second valve (V2, Mullard metallized KF35) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings.

Intermediate frequency 455 kc/s.

Diode second detector is part of double diode triode valve (V3, Mullard metallized KBC32). Audio frequency component in rectified output is developed across load resistor R6 and passed via A.F. coupling capacitor C16, switch S13, and manual volume control R7 to control grid of triode section, which operates as A.F. amplifier.

Second diode of V3, fed from V2 anode via C15, provides D.C. potential which is developed across R9 and fed back, via decoupling circuits, as G.B. to F.C. (except on S.W.) and I.F. valves, giving A.V.C.

Parallel-fed transformer coupling, by C17 and T1, between V3 triode and quiescent push-pull output stage comprising two pentodes (V4, V5, Mullard KL35's).

Fixed G.B. for all valves, and A.V.C. delay voltage, is obtained from the drop across R11, R12 in series with the negative H.T. lead to chassis.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver, using an H.T. battery measuring 115 V on load. Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 KK32	107	0.22	47	1.4
V2 KF35	107	3.5	47	0.28
V3 KBC32	107	1.2	—	—
V4 KL35	55	0.22	107	0.35
V5 KL35	106	2.2	107	0.35

COMPONENTS AND VALUES

RESISTORS		Values (ohms)	Location
R1	V1 pent. C.G. decoup. ...	250,000	F5
R2	V1 osc. C.G. ...	47,000	E5
R3	S.G.'s H.T. feed ...	33,000	F5
R4	I.F. stopper ...	47,000	B2
R5	A.V.C. decoupling ...	1,200,000	D5
R6	Sig. diode load ...	470,000	B2
R7	Volume control ...	1,000,000	D3
R8	V3 triode load ...	150,000	O5
R9	A.V.C. diode load ...	1,200,000	D5
R10	Tone control ...	50,000	C3
R11	Fixed G.B. and ...	100	C5
R12	A.V.C. delay ...	500	C5
R13	T1 sec. artificial ...	560,000	C5
R14	centre tap ...	560,000	C6
R15	V4 G.B. decoup. ...	47,000	C5

* Made up of 200 Ω + 300 Ω in series.

CAPACITORS

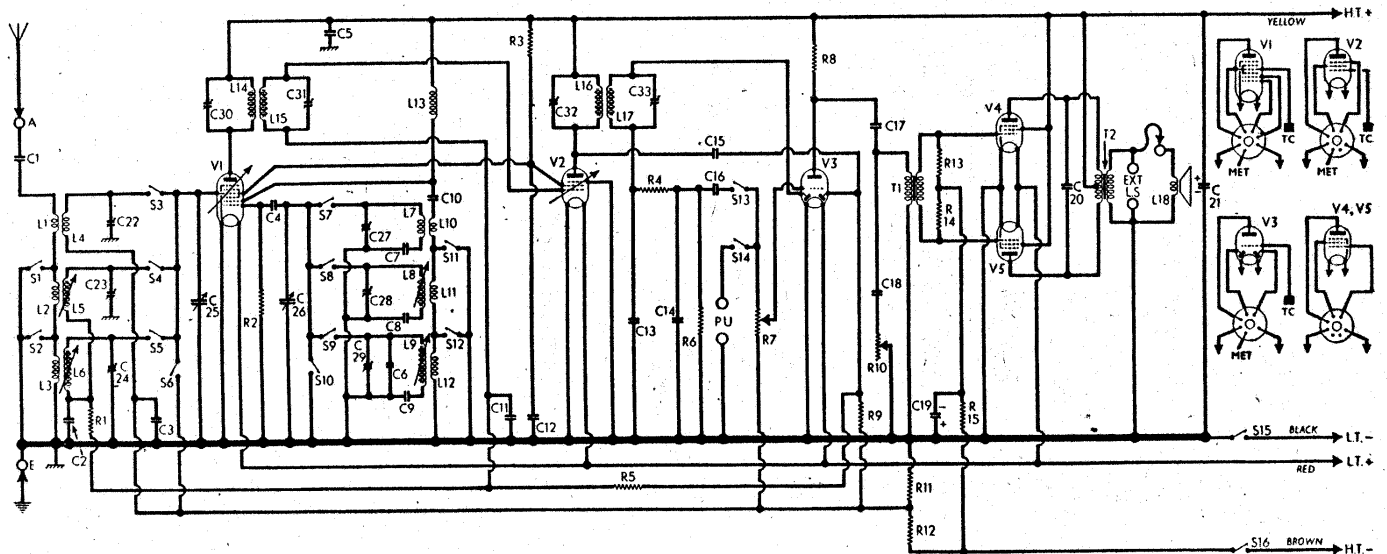
	Values (μ F)	Location
C1	Aerial series ...	0.0002 F5
C2	V1 pent C.G. de- ...	0.05 F5
C3	coupling ...	0.1 D4
C4	V1 osc. C.G. ...	0.0001 E5
C5	H.T. R.F. by-pass ...	0.1 F5
C6	L.W. fixed trim. ...	0.000056 E3
C7	Osc. S.W. tracker ...	0.0058 E3
C8	Osc. M.W. tracker ...	0.000575 E3
C9	Osc. L.W. tracker ...	0.0002 E3
C10	Osc. anode coup. ...	0.0001 E4
C11	V2 C.G. decoup. ...	0.05 D6
C12	S.G.'s decoup. ...	0.1 F5
C13	I.F. by-passes ...	0.0001 B2
C14	A.V.C. coupling ...	0.0002 D6
C15	A.F. coupling cap- ...	0.005 C5
C16	actitors ...	0.1 C5
C17	Part tone control ...	0.01 C4
C18	V4 G.B. by-pass ...	50.0 C4
C19*	Tone corrector ...	0.0005 B1
C20	H.T. reservoir ...	8.0 E6
C21*	Aerial S.W. trim. ...	0.00005 A1
C22†	Aerial M.W. trim. ...	0.00005 E3
C23†	Aerial L.W. trim. ...	0.00005 E3
C24†	Aerial tuning ...	0.0005 A2
C25†	Oscillator tuning ...	0.0005 A1
C26†	Osc. S.W. trim. ...	0.00005 A1
C27†	Osc. M.W. trim. ...	0.00005 E3
C28†	Osc. L.W. trim. ...	0.00005 E3
C29†	1st I.F. transformer ...	0.0002 A2
C30†	tuning ...	0.0002 A2
C31†	2nd I.F. transfor- ...	0.0002 B2
C32†	mer tuning ...	0.0002 B2
C33†		

* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS

	Approx. Values (ohms)	Location
L1	Aerial coupling ...	0.2 F3
L2	coils ...	0.6 F3
L3		80.0 F3

(Continued overleaf)



Circuit diagram of the Alba 471 battery 3-band superhet. The parallel-fed intervalve transformer T1 is artificially centre-tapped by R13-R14.

OTHER COMPONENTS (continued)		Approx. Values (ohms)	Loca- tion
L4	Aerial tuning coils	Very low	F3
L5		2-2	F3
L6		19-5	F3
L7	Oscillator tuning coils	Very low	F3
L8		1-8	F3
L9		5-0	F3
L10	Oscillator reaction coils	0-3	F3
L11		1-5	F3
L12		2-0	F3
L13	Osc. R.F. choke	215-0	E6
L14	1st I.F. trans.	0-5	A2
L15		6-5	A2
L16	2nd I.F. trans.	6-5	B2
L17		6-5	B2
L18	Speech coil	2-0	—
T1	Intervalve trans.	1,400-0	D4
T2		3,500-0	D4
	Output trans. total	1,400-0	B1
	Output trans. Sec.	0-3	B1
S1-S14	Waveband switches	—	E3
S15, S16	Battery switches, g'd R10	—	C3

DISMANTLING THE SET

Removing Chassis.—Remove the four control knobs (recessed grub screws) from the front of the cabinet;

from the underside of the cabinet remove the four round-head screws (with washers) securing the chassis to the base of the cabinet, and slide out chassis to the extent of the speaker leads.

Removing tuning assembly.—Unsolder from the seven tags on the assembly the leads connecting it to the chassis; also the mauve lead which emerges from the assembly close to the tag strip, the yellow lead to the volume control, and the earth braid which joins a chassis tag to the right of the assembly.

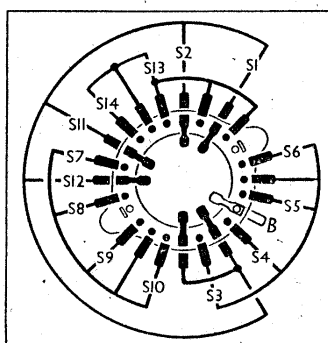
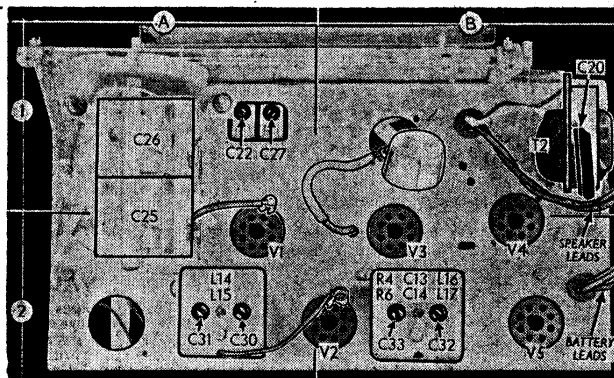
Switch set to S.W.; loosen the grub screw of the waveband indicator operating arm and slide the arm off the spindle;

remove four cheese-head screws (with lock washers) securing the assembly to the front chassis member, and lift it out.

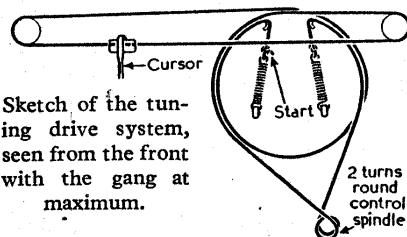
When replacing, the heads of two trimmers (C22, C27) should project through the hole in the chassis deck.

Connect the leads to the tuning assembly as follows, numbering the tags from left to right: 1, to C4 and C25; 2, to C10; 3, screened lead to "live" P.U. socket; 4, screened lead to C16; 5, to C1; 6, to junction of R1, C2; 7, to C25. The mauve lead goes to C3, the yellow lead emerging from the front of the assembly goes to the righthand tag on R7, and the braided earth lead should be resoldered to the chassis tag on the right of the assembly.

Plan view of the chassis. The I.F. transformer tuning capacitor adjustments are indicated, as also are the S.W. aerial (C22) and oscillator (C27) trimmers.



The switch unit, seen from rear.



Sketch of the tuning drive system, seen from the front with the gang at maximum.

GENERAL NOTES

Tuning Assembly.—This contains all the R.F. and oscillator coils L1-L12 and associated trimmers and trackers, together with the waveband switch unit S1-S14. Instructions for removing and replacing the assembly are given under "Dismantling the Set."

Switches.—S1-S14 are the waveband and pick-up switches, ganged in a single rotary unit in the tuning assembly. In the diagram in col. 2, the unit is drawn in detail as seen when the cover is removed from the tuning assembly, and the latter is inverted, as seen in our under-chassis view. The table below gives the switch positions for the four control settings, starting from the anti-clockwise position of the control. A dash indicates open, and C closed.

Drive Cord Replacement.—The sketch (col. 2) shows the course taken by the nylon-braided glass cord, and is self-explanatory. Fifty-four ins. of cord provides an ample length and allows a margin for tying off.

Switch Table

Switch	S.W.	M.W.	L.W.	Gram.
S1	o	—	—	—
S2	o	—	—	—
S3	o	o	—	—
S4	—	o	—	—
S5	—	—	o	—
S6	—	—	—	o
S7	o	—	—	—
S8	—	o	—	—
S9	—	—	o	—
S10	—	—	—	o
S11	o	—	—	—
S12	—	o	—	—
S13	o	o	—	—
S14	—	—	o	o

CIRCUIT ALIGNMENT

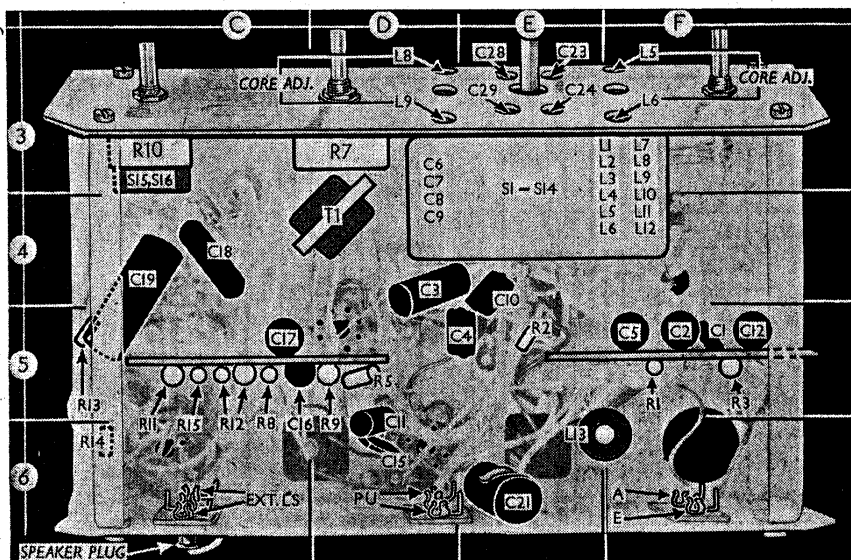
I.F. Stages.—Connect signal generator, via an 0.1 μ F capacitor in the "live" lead, to control grid (top cap) of V1 and the E socket. Turn the volume control to maximum, feed in a 455 kc/s (859.3m) signal, and adjust C30, C31, C32 and C33 (location references A2, B2) for maximum output, keeping the input low to avoid A.V.C. action.

R.F. and Oscillator Stages.—With the gang at maximum capacitance the cursor should coincide with the high wavelength ends of the three scales. Transfer "live" signal generator lead, via a suitable dummy aerial, to A socket.

M.W.—Switch set to M.W., tune to 215 m on scale, feed in a 215 m (1,396 kc/s) signal, and adjust C28 and C23 (E3) for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust the cores of L8 (D3) L5 (F3) for maximum output. Check setting of L8 at 350 m (857 kc/s) for correct calibration, and repeat the C28, C23 adjustments if necessary.

S.W.—Switch set to S.W., tune to 19 m on scale, feed in a 19 m (15.79 mc/s) signal, and adjust C27 and C22 (A1) for maximum output.

L.W.—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal, and adjust C29 and C24 (E3) for maximum output. Tune to 1,900 m on scale, feed in a 1,900 m (157.9 kc/s) signal, and adjust the cores of L9 (D3) and L6 (F3) for maximum output. Finally, check the settings of C29 and C24.



Under-chassis view. The large unit at the top is the tuning assembly.